

Chapter 1

State Sanitary Code

Subpart 6-3

Recreational Aquatic Spray Grounds (Statutory authority: Public Health Law, Section 225)

Effective March 28, 2007

NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Community Environmental Health and Food Protection

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GENERAL PROVISIONS

Section 6-3.1 Purpose.

The purpose of this Subpart is to assure a sanitary, healthful and safe environment for the public when using recreational aquatic spray grounds.

6-3.2 Definitions.

- (a) Adequate shall mean sufficient to accomplish the purposes for which something is intended, and to such a degree that no unreasonable risk to health or safety is presented. An item installed, maintained, designed and assembled, an activity conducted or act performed, in accordance with generally accepted standards, principles or practices applicable to a particular trade, business, occupation or profession, is adequate within the meaning of this Subpart.
- (b) Foot shower shall mean a shower head or similar water fixture for use in rinsing debris from patrons' feet.
- (c) Patrons shall mean those individuals utilizing the spray grounds.
- (d) Permit-issuing official (PIO) shall mean the State Commissioner of Health, the health commissioner or health officer of a city of 50,000 population or over, the health commissioner or health officer of a county or part-county health district, the State regional health director or district director having jurisdiction, or any county or public health director having all the powers and duties prescribed in section 352 of the Public Health Law. The permit-issuing official may designate additional persons to act in his/her behalf to issue permits required by this Subpart.
- (e) Qualified swimming pool water treatment operator shall mean an individual who has successfully completed an adequate course of instruction regarding the safe and effective operation and maintenance of pool water treatment equipment.
- (f) Recreational aquatic spray grounds, also known as "spray grounds", are the buildings and appurtenances used in conjunction with a spray pad in which sprayed water is continually drained and collected in a treatment and recirculation system.
- (g) Spray features shall mean the devices and plumbing used to convey the treated water to the spray pad to spray the patrons.
- (h) Spray pad shall mean the specific area consisting of the play surface, spray features, and drains, upon which the patrons stand and are sprayed with water.
- (i) Spray pad treatment system shall mean the equipment and processes used to filter, disinfect and circulate the water used for the spray pad and spray features.

(j) Spray pad treatment tank shall mean the vessel used to collect the water that has been sprayed on the spray pad and returned through the spray pad drains.

(k) Supervisory staff shall mean individuals responsible for supervising the patrons to ensure compliance with regulations for use, and trained in the operation and maintenance of the spray pad treatment system.

(l) Uniform Code shall mean the 19 NYCRR Chapter XXXIII, Subchapter A - State Uniform Fire Prevention and Building Code.

6-3.3 Application.

(a) The requirements of this Subpart shall apply to all spray grounds except:

(1) A facility owned and/or maintained by an individual for the use of his family and friends;

(2) A facility that uses water that complies with Subpart 5-1 or equivalent standards that discharges to waste without impoundment or recirculation of the water;

(3) Where spray features are installed in a swimming pool, wading pool, wave pool or other pool regulated under Subpart 6-1.

(b) Section 6-3.5 of this Subpart shall not apply to spray grounds maintained and operated in connection with a temporary residence, children's camp or campground subject to the regulations of Subpart 7-1, 7-2 or 7-3 of this Title.

6-3.4 Enforcement.

(a) Permits and placarding.

(1) Operation of a spray ground without a permit is a violation of this Subpart. The permit-issuing official may order any spray ground operating without a permit to close and remain closed until the facility has obtained and displays a valid permit.

(2) The enforcement procedures delineated in sections 12, 12-a, 12-b, 16, 308, 309, 1303-1305 and 1308 of the Public Health Law may be used, as appropriate. Where a public health hazard is found, the spray ground shall be placarded to prohibit use until the hazard is corrected in order to protect the public health or safety of the patrons. When a placard is used, it shall be conspicuously posted at each entrance leading to the spray ground. The placard shall state the authority for its placement and indicate that concealment, mutilation, alteration or removal of it by any person without permission of the permit-issuing official shall constitute a violation of this Chapter and the Public Health Law.

(3) Within 15 days of placarding of a facility, the operator of such facility shall be provided with an opportunity to be heard and present proof that continued operation of the facility does not constitute a danger to the public health.

(4) The permit-issuing official or his/her designated representative shall inspect the premises, within two working days of notification that the hazard has been eliminated, to remove the placards after verifying correction.

(b) Public health hazards. Any of the following violations are public health hazards which require the permit-issuing official or his/her designated representative to order immediate correction or to immediately institute action as provided in the law and in this Subpart:

(1) Failure to provide adequate supervision of the spray ground as prescribed in Section 6-3.22 of this Subpart;

(2) Failure to provide the minimum ultraviolet light dosage and/or absence of a residual of the required chemical disinfectant;

(3) Failure to continuously operate the spray ground's filtration and disinfection equipment;

(4) Use of an unapproved or contaminated water supply source for potable water use;

(5) Overhead electrical wires within 20 feet horizontally of the spray pad;

(6) Unprotected electrical circuits or wiring within 10 feet of the spray pad;

(7) Plumbing cross-connections between the drinking water supply and spray pad treatment system or between sewerage system and the spray pad's filter backwash facilities;

(8) Use of unapproved chemicals or the application of chemicals by unapproved methods to the spray pad water;

(9) Broken or missing drain grates on the spray pad;

(10) Glass or sharp objects on the spray pad or deck area;

(11) Apparent contamination of the spray pad and/or spray pad treatment tank by a potentially toxic chemical or a bacteriological substance that could present a hazard to patrons; or

(12) Any other condition which the permit-issuing official determines creates an immediate threat to public health.

(c) Other violations. Failure to comply with other sections of this Subpart or of other Parts of this Chapter are also subject to a penalty.

6-3.5 Permit for operation.

(a) No municipality, school district, person, group of persons, firm, corporation, association, organization or institution shall operate or maintain or permit the use of any spray ground and other related facilities without a permit from the permit-issuing official to be issued subject to the provisions of this Chapter and such additional sanitary or safety safeguards as may be required by the permit-issuing official. The permit shall be posted conspicuously at the facility.

(b) Application for a permit shall be made to the permit-issuing official at least 45 days before the expiration of a permit or at least 45 days before the opening of any spray ground. Such application shall include a written safety plan as described in Section 6-3.22(c).

6-3.6 Variance and waivers.

(a) Variance. In order to allow time to comply with certain provisions of this Subpart, an operator may submit a written request to the permit-issuing official for a variance from a specific provision(s) when the health and safety of the public will not be prejudiced by the variance, and where there are practical difficulties or hardships in immediate compliance with the provision. An operator must meet all terms of an approved variance including the effective date, the time period for which the variance is granted, the requirements being varied and any special conditions the permit-issuing official specifies.

(b) Waiver. In order to obtain a waiver permitting alternative arrangements that do not meet the provisions of this Subpart but do protect the health and safety of the occupants and the public, an operator may submit a written request to the permit-issuing official for a waiver from a specific provision of this Subpart. Such request must demonstrate that the alternate arrangements provide adequate protection of the health and safety of the patrons and public. The permit-issuing official shall obtain and be guided by the recommendation of the State Department of Health prior to granting or denying a waiver. An operator must meet all terms of an approved waiver. A waiver will remain in effect indefinitely unless revoked by the permit-issuing official or the facility changes operators.

6-3.7 Injury and illness incident reporting.

A full report of any injury or illness incident occurring at a spray ground shall be reported by the owner/operator to the permit-issuing official within 24 hours of its occurrence, and a notation recorded in a log book. This shall include all incidents occurring at a spray ground facility which: (a) result in death; (b) require resuscitation; (c) require referral to a hospital or other facility for medical attention; or (d) is an illness alleged to be associated with the spray ground water quality.

CONSTRUCTION

6-3.8 Approval of plans and reports.

(a) New construction.

(1) No municipality, school district, person, group of persons, firm, corporation, association, organization or institution shall install or construct a spray ground, or make any addition or modification to an existing spray ground, until plans and specifications receive the approval of the permit-issuing official. All plans shall be prepared by a person licensed by the State of New York to practice engineering or architecture. The permit-issuing official may require, when granting this approval, such modifications or conditions as the public health or safety may require.

(2) Design standards for spray grounds (see Section 6-3.24 of this Subpart) shall be the basis upon which all plans for spray grounds shall be reviewed, approved and constructed.

(3) Plans for any potable water treatment or sewage treatment facilities to be constructed on-site at spray grounds shall be approved prior to construction, by the permit-issuing official or such agency having jurisdiction for such plan approval.

(b) Spray grounds constructed prior to the effective date of this Subpart.

(1) The owner/operator of a spray ground constructed prior to the effective date of this Subpart must submit a report addressing all of the design criteria specified in Section 6-3.24. This report shall be prepared by a New York State licensed professional engineer and must be submitted to the permit-issuing official at least 90 days prior to the proposed opening date. The report must evaluate the spray ground's compliance with this Subpart and identify each aspect of non-compliance and include recommendations for compliance. The permit-issuing official shall obtain the approval of the State Department of Health prior to granting or denying approval of alternative provisions recommended by the professional engineer as providing an equivalent level of protection for compliance with design criteria in Section 6-3.24. Waivers for those alternative provisions shall be issued in accordance with Section 6-3.6(b).

6-3.9 Construction compliance certificate.

The operator shall submit, prior to public use of new facilities or equipment, a construction compliance certificate to the permit-issuing official. This certificate shall be prepared and signed by a professional engineer or architect licensed to practice in New York State. The certificate shall include a statement that the spray ground and the appurtenances have been constructed in accordance with approved plans and specifications.

OPERATION, SUPERVISION AND MAINTENANCE

6-3.10 Spray ground operation and maintenance.

- (a) Every spray ground shall be maintained and operated in a clean, safe and sanitary manner at all times. Spray ground recirculation and chemical disinfection equipment shall be operated continuously. Ultraviolet light disinfection units shall be operated in accordance with approved plans and specifications.
- (b) Spray ground equipment and appurtenances shall be operated and maintained in accordance with approved plans and specifications.
- (c) Cracks in the spray pad and/or decking shall be repaired when they may be a potential for leakage, present a tripping hazard, a potential cause of lacerations, or impact the ability to properly clean and maintain the spray pad area.
- (d) Drain grates shall be secured in place at all times. Broken or missing drain grates shall be repaired or replaced before the spray pad is used.
- (e) Inlets shall be adjusted to produce uniform circulation of water and to facilitate the maintenance of a uniform disinfectant residual throughout the spray pad treatment tank.
- (f) The water level in the spray pad treatment tank shall be maintained continuously by an automatic level control system.
- (g) The deck shall be kept clean and free of puddled water. Glass containers are prohibited from the spray pad and all deck areas.
- (h) Foot showers shall be kept clean and free of puddled water.
- (i) At the beginning of each day prior to use and at other times when needed, the spray pad must be adequately cleaned and flushed to remove any materials or contaminants on the surface of the spray pad. The water must be flushed to waste and not discharged into the spray pad treatment tank. Flushing may be accomplished by use of a hose supplied with potable water or by operation of the spray features providing it adequately flushes the entire pad surface and is discharged to waste.
- (j) The spray pad treatment tank shall be completely drained and cleaned at a frequency necessary to maintain water quality.

6-3.11 Treatment.

All spray grounds shall be equipped with a recirculation system which includes filtration and disinfection facilities to provide water quality consistent with the bacteriological, chemical and physical standards required in Section 6-3.19 of this Subpart. The filtration

and chemical treatment systems for the spray pad treatment tank must operate 24 hours a day.

(a) Recirculation rate. The spray pad treatment tank water must be re-circulated and treated in accordance with the approved design rates.

(b) Filtration.

(1) Sand filters.

(i) High-rate sand filters (pressure or vacuum) can be operated at a filter rate up to 15 gallons per minute (gpm)/square foot (sf).

(ii) Filter air release valves shall be opened daily or more frequently if necessary to remove air, which collects in the filters.

(iii) Sand filters shall be backwashed at a flow rate of 12 to 15 gpm/sf or at the design rate recommended by the manufacturer.

(2) Diatomaceous earth filters.

(i) Diatomaceous earth filters shall be properly maintained and operated according to the manufacturer's instructions and at a filter rate not to exceed two gpm/sf with body feed or 1.5 gpm/sf without body feed.

(ii) Diatomaceous earth filter backwash water must discharge to the sewer system through a separation tank. The separation tank sludge shall be disposed of or treated as a solid waste material in accordance with local and State laws, rules and regulations.

(3) Cartridge filters.

(i) Cartridge filters shall be operated at a filter rate not to exceed a maximum of 0.375 gpm/sf.

(ii) Cleaning of cartridge filters must be in accordance with the manufacturer's recommendations. One complete spare set of cartridges shall be available at all times to facilitate cleaning.

(4) Flow measurement. All flow meters shall be maintained in accordance with provisions in Section 6-3.24(f)(8) of this Subpart.

(c) Disinfection/Chemical treatment. An automatic controller is required for monitoring and adjusting the level of free residual disinfectant and pH in the spray pad treatment tank. The following chemical disinfectants have been approved for use in spray grounds:

(1) Disinfection with chlorine. When calcium hypochlorite or sodium hypochlorite are used to disinfect a spray pad and the spray pad treatment tank the dose of chlorine or chlorine compound shall be sufficient to maintain a concentration of at least 2.0 mg/l free chlorine throughout the system including the treatment tank and water emanating from the spray features. A free chlorine residual of 10.0 mg/l shall not be exceeded in any spray pad treatment tank during use. All chlorine solutions shall be added to the spray pad water by chemical feed equipment conforming with standards contained in Section 6-3.24(h)(1) of this Subpart.

(i) Handling of calcium hypochlorite. When calcium hypochlorite is used as a disinfectant, extreme caution must be taken in the handling and mixing of the chemical to avoid possible fire and explosion hazards. A dry, aboveground, locked storage area shall be provided. Clean inert materials shall be used, and mixing must be by pouring the chemical into water and never by pouring water into the chemical.

(2) Disinfection with bromine. When bromine is used as the disinfectant, the following shall be followed:

(i) Bromine shall be fed on a continuous basis.

(ii) A concentration of at least 4.4 mg/l bromine residual shall be maintained throughout the system including the spray pad treatment tank water and water emanating from the spray features.

(iii) Solid-stick or tablet-type bromine (brom-chlor-dimethyl-hydantoin) shall be used with feed equipment conforming to the standards contained in Section 6-3.24(h)(iv) of this Subpart.

(3) Disinfection with ultraviolet light. Ultraviolet light disinfection is required in addition to an approved chemical disinfectant listed in this Section and shall be used as follows, unless another treatment process has been approved in accordance with Section 6-3.24(h)(3)(i):

(i) Ultraviolet light shall be used to disinfect water provided to the spray pad in accordance with the approved plans and specifications;

(ii) Ultraviolet light disinfection systems shall have a properly calibrated light intensity meter, automatic water flow shutoff in the event the light intensity decreases below the manufacturer's recommended level for the flow rate and an alarm to advise the attendant of a system malfunction;

(iii) The ultraviolet light units shall be cleaned in accordance with the manufacturer's recommendations;

(iv) The ultraviolet light unit's ultraviolet light intensity meter reading shall be monitored and recorded at least two times daily. When the output

intensity falls below the setpoint intensity, conditions causing decreased ultraviolet light intensity at the sensor shall be evaluated and corrected. The ultraviolet lamp(s) shall be replaced when the decreased ultraviolet light intensity is due to lamp failure;

(v) An operation log shall be maintained at the facility and entries shall be made for dates and type of maintenance and repair, including cleaning, lamp replacement, etc;

(vi) Lamps shall be replaced in accordance with manufacturer's recommendations.

(4) Positive feed equipment shall be provided for pH control and the spray pad treatment tank water pH shall be maintained between 7.2 and 7.8.

(5) Other disinfectants. Disinfectants other than those listed above may be used only if the State Commissioner of Health determines they are safe and effective when used in accordance with the manufacturer's directions.

(6) Test kits/Testing. DPD test kits with reagents no more than one year old capable of measuring pH and chlorine or bromine residuals, shall be available at each spray ground. Tests shall be conducted and recorded for pH and free and total chlorine or bromine residual at the beginning, during, and at the end of each use period. Where required, reagents for alkalinity and hardness tests shall be available. Where ozone generating equipment is installed, ozone testing shall be conducted in accordance with Section 6-3.24(h)(5)(i) of this Subpart.

(d) Chemicals. Only chemicals approved for water supply use by the U.S. Environmental Protection Agency, as food additives by the U.S. Food and Drug Administration, or by the State Commissioner of Health, shall be used in spray grounds. Where equipment for chemical addition is required, it shall be installed and operated in accordance with Section 6-3.24(h) of this Subpart. All chemical containers, including those used with chemical feeders, must be clearly labeled regarding their contents.

6-3.12 Water supply.

The water supply serving all plumbing fixtures, including drinking fountains, lavatories and showers, shall, after treatment, meet the provisions required for a public water system as defined in Subpart 5-1 of the State Sanitary Code. A spray ground with an on-site water supply that does not meet the definition of a public water system must comply with the standards established in Subpart 5-1 for a non-community water system.

6-3.13 Sewage system.

(a) All waste water including filter backwash water from a spray ground shall be discharged in such a manner that waste water cannot be siphoned, flooded or otherwise discharged into the spray pad treatment tank.

(b) Waste water from the spray ground shall discharge to a public sewer system or other approved sewage disposal system.

6-3.14 Garbage; refuse.

Garbage and refuse shall be collected, handled and disposed of in a sanitary manner.

6-3.15 Bathhouse and toilet facilities.

(a) General. Toilet facilities and lavatories including diaper changing areas shall be maintained and conveniently located at a spray ground.

(b) Walls and floors of the bathhouse shall be kept clean and free from cracks or open joints. The floors shall be well drained.

(c) All fixtures within the bathhouse shall be maintained in a clean and sanitary condition at all times.

(d) All toilet facilities and dressing rooms shall be ventilated and maintained.

(e) Showers, when provided, shall be supplied with water at a temperature no more than 110°F. Thermostatic, tempering or mixing valves shall be kept in good operation to prevent scalding of the users. Shower curtains shall be kept clean.

(f) All lavatories shall be provided with soap, paper towels or electrical hand-drying units, and covered waste receptacles. Suitable sanitary napkin receptacles shall be provided in toilet facilities used by females.

6-3.16 Fencing/enclosure.

All spray pads shall be enclosed within a fence or other barrier to prevent access by patrons and animals when the spray pad is not supervised. Access to the spray pad shall be prevented when the spray pad is not supervised.

6-3.17 Lighting and electrical requirements.

(a) Lighting or other electrical circuits provided in the spray pad area must be protected by ground-fault circuit interrupters in accordance with the Uniform Code.

(b) Defects in the electrical system, including overhead lights and their respective lenses, shall be immediately repaired.

(c) Portable electrical devices, such as announcing systems and radios within the reach of patrons on the spray pad, shall be prohibited.

(d) At all indoor spray pads and spray pads used at night, surface lighting shall be adequate to allow an observer to clearly see the spray pad and deck.

(e) Operators of existing spray grounds shall possess a certificate of electrical compliance with the Uniform Code issued by the New York Board of Fire Underwriters or equivalent certifying agency.

(f) No overhead electrical wiring shall pass within 20 feet horizontally of the spray pad.

6-3.18 Ventilation.

All indoor spray grounds shall be adequately ventilated, either by natural or mechanical means.

6-3.19 Water quality.

(a) Sample collection and analysis. Microbiological samples shall be collected from spray pad treatment tanks when determined by the permit-issuing official to be necessary to evaluate water quality, and be examined in laboratories approved by the New York State Department of Health.

(b) Microbiological quality. Total coliform bacteria levels should not exceed 4 per 100 milliliters in more than one sample examined each month. When the membrane filter technique is used, or when the fermentation tube method is used, coliform bacteria shall not be present in more than 10 percent of portions analyzed in any month; also, total bacteria (heterotrophic plate count or standard plate count) shall not exceed 200 per milliliter.

(c) Chemical quality.

(1) The chemical quality of the spray feature water shall not cause irritation to the eyes or skin of the patrons or have other objectionable physiological effects on patrons.

(2) The total alkalinity of the spray pad treatment tank water shall be maintained within the range of 80 to 120 mg/l.

(3) The spray pad treatment tank water shall be chemically balanced. The permit-issuing official may require that the operator determine the saturation index monthly or at any other frequency required to maintain water clarity, proper disinfection, alkalinity, and pH levels.

(d) Cleanliness. The spray pad and features shall be kept free of sediment and visible soil, and the treatment tank water surface shall be kept free of visible floating matter.

(e) Turbidity. The turbidity in the spray pad treatment tank shall not exceed 3 nephelometric turbidity units (NTU) at any time during use. If this turbidity level is exceeded, the spray pad shall be closed for use until the spray pad treatment system reduces the turbidity to less than 3 NTU.

6-3.20 Operator and operating records.

(a) Each spray ground shall be maintained by an operator familiar with its equipment. The operator shall comply with the regulations in this Subpart and any conditions of the permit.

(b) All spray grounds shall be maintained by a qualified swimming pool water treatment operator.

(c) Complete daily operation records shall be kept of the operation of each spray pad on forms approved or furnished by the State Commissioner of Health. Upon completion, a copy of such records shall be maintained at the facility for 12 months. The permit-issuing official may require submission of reports at periodic intervals.

6-3.21 Inspections.

The permit-issuing official and his/her designated representatives shall have the right of entrance and inspection of any spray ground facility as authorized under Section 1.11 of this Title. The most recent report of inspection shall be available at every spray ground facility.

6-3.22 Supervision.

(a) Personnel.

(1) At least one supervisory staff person shall provide periodic supervision of the spray ground as specified in the safety plan.

(b) Safety equipment.

(1) Required first aid equipment must be provided at the spray ground unless otherwise specified in the safety plan. A first aid kit, which may be any commercially prepared 24 unit kit or a supply of band aids, bandages, compresses and self adhering gauze bandages.

(c) Safety plan. Operators of spray grounds must develop, update and implement a written safety plan, consisting of procedures for daily patron supervision, injury prevention, reacting to emergencies, injuries and other incidents, providing first

aid and summoning help. The safety plan shall be approved by the permit-issuing official and kept on file at the spray ground. Approval will be granted when all the components of this section are addressed so as to protect the health and safety of the patrons and the plan sets forth procedures to insure compliance with this Subpart.

6-3.23 General requirements.

(a) Care of suits and towels. All bathing suits and towels furnished or rented shall be washed with a detergent in hot water, rinsed and thoroughly dried after each use.

(b) Posting regulations. Signs stating the following shall be posted conspicuously at the spray pad or enclosure/entrance and in the dressing rooms of all spray grounds:

- (1) The hours that a spray pad is open; and
- (2) That spray pad use is prohibited at any other time.
- (3) Individuals with diarrhea shall not use the spray pad.
- (4) Spray features use recirculated water, do not drink.
- (5) Children who are not toilet trained must wear a swim diaper covered by rubber pants.
- (6) No animals on or near spray pad.
- (7) Pollution of the spray pad area is prohibited. Urinating, discharge of fecal matter, expectorating or blowing the nose in any spray pad is prohibited.

6-3.24 Spray ground design standards.

(a) Submission of plans.

(1) General. All plans shall be prepared by a person licensed by the State of New York to practice engineering or architecture. All construction shall comply with the requirements of the Uniform Code. Plans, specifications and reports submitted for formal approval must contain sufficient information to demonstrate to the permit-issuing official or his/her designated representative that the proposed spray ground, or improvements thereto, will meet the standards contained herein and shall include, but not be limited to, those factors hereinafter set forth in Section 6-3.24(a)(2).

(2) Basis of design report.

- (i) Spray pad shape and area.

- (ii) Number and type of spray features and drains.
 - (iii) Spray pad treatment tank volume.
 - (iv) Feature and filter flow rates, turnover and filtration rate.
 - (v) Patron use (daily maximum and average).
 - (vi) Source, quality, quantity available and characteristics of the water supplied to a spray ground and spray pad, including alkalinity, pH, iron and manganese.
 - (vii) Detailed description of filtration, recirculation equipment and chemical feed equipment.
 - (viii) Hydraulic computations including head loss in all piping and recirculation equipment.
 - (ix) Pump curves, showing that the proposed recirculation pump can adequately pump proposed flows.
- (3) Plans and specifications.
- (i) General layout plan.
 - (a) Name and address of the proposed facility and the name and address of the owner.
 - (b) Scale, north point and direction of prevailing wind.
 - (c) Date, address, name, professional seal and signature of the design engineer or architect.
 - (d) A plot plan of the property to be used, indicating the topography, the arrangement and location of present and proposed structures, and the location of present and proposed spray ground.
 - (ii) Detailed plans. All detailed plans shall be drawn to a suitable scale and include the following information:
 - (a) Complete construction details, including dimensions, elevations and appropriate cross-sections.
 - (b) Schematic diagrams and plan and elevation views of the spray pad water treatment and recirculation system.
 - (c) Size and location of all piping, including elevations.

(d) Specifications. Complete, detailed specifications for the construction of the spray ground/spray pad, bathhouse, recirculation system, filtration facilities, disinfection equipment and all other appurtenances shown on detailed plans shall be submitted.

(b) Construction material.

(1) Materials. Spray pads shall be constructed of materials which are inert, stable, nontoxic, watertight and enduring. Sand or earth surfaces are not permitted.

(2) Finish. Spray pad surface must be slip resistant and easily cleanable.

(c) Design detail.

(1) Spray pad. The spray pad shall be sloped to drain(s). The slope shall be sufficient to prevent water from collecting on the pad.

(i) Drain systems. The size, number and locations of the spray pad drains shall be determined and specified so as to assure water does not accumulate on the spray pads. Flow through the drains to the spray pad treatment tank shall be under gravity, direct suction outlets from the spray pad are prohibited.

(a) Valves and piping shall be provided in the spray pad drain system to allow for discharging spray pad water to waste prior to returning to the spray pad treatment tank.

(b) Grating. Openings in the grates covering the drains shall not be over one-half inch wide. Gratings shall not be removable without the use of tools.

(2) Decks. A continuous clear deck shall surround the entire spray pad perimeter. It shall be not less than five feet wide. The deck shall be of a uniform, easily cleaned, impervious material and be protected from surface runoff.

(i) Slope. The deck shall be sloped at least one-fourth inch per foot to deck drains or grade.

(ii) Drainage. Deck drains, when used, shall be spaced and arranged so that not more than 400 square feet of area is tributary to each drain, and drains shall not be spaced more than 25 feet apart. There shall be no direct connection between the spray pad deck drains and the sanitary sewer system, or the treatment tank or recirculation system.

(iii) Carpeting. Carpeting shall not be permitted on the spray pad or decks.

(iv) Hose bibbs. Hose bibbs shall be provided to facilitate flushing of the spray pad and deck areas and shall be provided with antisiphonage devices.

(3) Foot Showers. Showers shall be provided at the entry to the spray pad to allow for rinsing debris from patrons' feet prior to entering the spray pad except such showers are not required at indoor spray grounds or those within the enclosure of an aquatic amusement park. The use of foot baths is prohibited.

(i) Waste water from the foot showers shall be discharged to an approved waste disposal system to prevent standing water on the ground surface, and/or contamination of ground water, surface water or the spray ground.

(4) Fencing. All spray pads shall be provided with an enclosure to prevent access by patrons and animals when the spray pad is not supervised.

(5) Spray features. Spray features shall be designed and installed so as not to pose a tripping hazard, a hazard to patrons due to water velocity from the spray feature discharge, or other safety hazards.

(d) Lighting, electrical, ventilation requirements.

(1) Lighting. Artificial lighting shall be provided at all spray pads which are used at night, or which do not have adequate natural lighting, so that all portions of the spray pad and deck may be readily seen.

(i) Equipment rooms. All spray pad equipment and chemical storage rooms shall be provided with artificial lighting sufficient to illuminate all equipment and supplies.

(2) Electrical.

(i) Wiring shall conform to the Uniform Code and the requirements of the appropriate regulatory agency. A certificate of electrical compliance shall be submitted for all new electrical work.

(ii) Overhead clearance. No electrical wiring shall pass overhead within a 20-foot horizontal distance of the spray pad.

(iii) Electrical receptacles. Ground-fault circuit interrupters shall be provided on all spray pads, for all lighting and other electrical circuits in the area of the spray pad. These devices may be required in an existing spray pad, when the permit-issuing official determines it is necessary to protect the safety of patrons.

(3) Ventilation.

(i) Room ventilation. Bathhouses, mechanical equipment rooms, storage areas and indoor spray pad enclosures shall be ventilated, either by natural or mechanical means in accordance with requirements contained in the Uniform Code. Fuel-burning heating equipment shall be installed and vented to the outdoors in accordance with the Uniform Code.

(e) Water supply and wastewater disposal.

(1) Water supply. The water supply serving all plumbing fixtures, including drinking fountains, lavatories and showers, shall, after treatment, meet the provisions required for a public water system as defined in Subpart 5-1 of the State Sanitary Code. A spray ground with an on-site water supply that does not meet the definition of a public water system must comply with the standards established in Subpart 5-1 for a non-community water system.

(2) Cross-connection control. All portions of the water distribution system serving the spray pad and auxiliary facilities shall be protected against backflow and back-siphonage. Water introduced into the spray pad, either directly or to the recirculation system, shall be supplied through an air gap or by another method which will prevent backflow and back-siphonage.

(3) Sanitary wastes. Sanitary sewage shall be disposed of through a municipal sanitary sewerage system. If a private subsurface sewage disposal system or other system must be used, approval of the system must be obtained from the appropriate regulatory agency.

(4) Spray pad waste water. Water used to flush the spray pad shall be discharged to an approved waste disposal system through a suitable air gap so as to preclude the possibility of backup of sewage or waste water into the spray pad piping system. Approval of the system must be obtained from the appropriate regulatory agency.

(f) Spray pad treatment system design.

(1) The water from the spray pad treatment system cannot be combined/circulated with water from other aquatic facilities such as swimming pools, water slides, or wave pools unless:

(i) All the water from the spray pad is treated by ultraviolet (uv) light disinfection prior to combining/circulating with water from the other aquatic facilities or;

(ii) UV light disinfection must be provided to treat all of the water in the other aquatic facilities. The minimum flow rate through the treatment system shall be calculated using the two techniques described below. The

larger flow rate resulting from the two calculations shall be the minimum flow rate used for the treatment system design. All recirculated water must pass through both the ultraviolet light unit(s) and filters.

(a) Minimum flow for ultraviolet light disinfection:

$$Q = \left(\frac{14.8 - \ln(V)}{12 \times 60} \right) V$$

Q is in gallons per minute through the ultraviolet disinfection/filtration system
V is in gallons and is the volume of the pool.

Number of turnovers=14.8-ln(V)

The term ln(V) is the natural log of the volume.

(b) Minimum filtration rate for a combined pool/spray pad system:

The minimum filtration rate for a pool that shares water with a spray pad is specified in Section 6-3.24(f)(3)(ii)(c) of this Subpart. The minimum filtration flow rate shall be at least the sum of the flow rate for the pool type specified in Subpart 6-1 and one third of the spray feature flow rate.

(2) When water supplying the spray features is removed from the spray pad treatment tank by a pump separate from the filtration/recirculation pump system, the ratio of the flow rate of water supplied to the spray features directly from the treatment tank must not exceed 3 times the design filtered water flow rate.

(3) Recirculation systems and equipment. A recirculation system consisting of pumps, piping, filters, water conditioning and disinfection equipment, and other accessory equipment, shall be provided which will clarify, chemically balance and disinfect the spray pad water. The spray pad treatment tank filtration, circulation and spray pad chemical disinfection equipment must operate 24 hours a day.

(i) Equipment approval. Equipment used or proposed for use in spray pad water treatment shall be of proven design and construction and other than ultraviolet light units be tested and listed by the National Sanitation Foundation (NSF) or another testing laboratory under standards promulgated by NSF.

(ii) Turnover rate.

(a) When water is supplied to the spray features by a pump which removes water directly from the spray pad treatment tank independent from the spray pad treatment tank filter pump, the turnover rate for filtration will be determined by the feature flow rate. The filtration

flow rate for the spray pad treatment tank must be at least one-third of the design spray feature flow rate.

(b) When all of the water supplied to the spray features is filtered upon removal from the spray pad treatment tank before being supplied to the spray features, a reduced pumping rate for filtration/treatment of the spray pad treatment tank water can be used when the spray features are not in operation. However, a minimum 4-hour turnover rate is required.

(c) The minimum flow rate through the filtration system for combined pool/spray pad systems shall be equal to or greater than the sum of the flow rate for the specific type pool as required by Subpart 6-1 of this Title, plus one third of the spray feature flow rate.

(4) Spray pad treatment tank. The spray pad treatment tank that receives the effluent water from the spray pad shall conform to the following specifications.

(i) The volume of the water in the spray pad treatment tank shall be sufficient to assure continuous operation of the filtration system. The capacity shall be measured from six inches above the uppermost pump inlet to the bottom of the overflow waste outlet.

(ii) The spray pad treatment tank must be designed to provide ready access for cleaning and inspections, and be capable of complete draining. An overflow pipe to convey excess water to waste through a suitable air gap must be provided.

(iii) The spray pad treatment tank shall be constructed of materials which are inert, corrosion resistant, nontoxic, and watertight such as concrete, fiberglass, stainless steel, etc., which can withstand all anticipated loadings under full and empty conditions.

(iv) An automatic water level controller shall be provided for the spray pad treatment tank.

(v) The makeup water shall be introduced into the spray pad treatment tank through an air gap or by another method which will prevent back flow and back-siphonage.

(vi) A screen or similar device shall be provided through which all water from the spray pad shall pass before entering the spray pad treatment tank or another method/process described to provide for removal of debris on the surface layer of the spray pad treatment tank water.

(vii) Spray pad treatment tank filtered/treated water inlets.

(a) Number and location. An adequate number of filtered/treated water inlets shall be provided and located for complete mixing and circulation of treated water within the spray pad treatment tank.

(viii) Spray pad treatment tank drain. At least one main drain suction outlet supplying water to the spray pad treatment tank filtration system shall be provided at the deepest point in the spray pad treatment tank.

(5) Piping.

(i) Materials. The recirculation piping and fittings shall be of nontoxic material, resistant to corrosion, and able to withstand operating pressures suitable for water supply use.

(ii) Velocities. The pipes, fittings and valves of the recirculation system shall be sized so that velocities do not exceed 6 feet per second under suction, 10 feet per second under pressure and 3 feet per second in gravity flow. The velocities may be exceeded when hydraulic computations indicate higher velocities will not adversely affect the spray pad treatment system.

(6) Drainage and installation. All equipment and piping shall be designed and fabricated to drain completely by use of drain plugs, drain valves or other means. All piping shall be supported continuously or at sufficiently close intervals to prevent sagging. All suction piping shall be sloped in one direction, preferably toward the pump. All supply and return pipelines to the spray pad shall be provided with insertable plugs or valves to allow the piping to be drained to a point below the frost line. Provision shall be made for expansion and contraction of pipes.

(7) Pumps and strainers.

(i) Strainers. Strainers shall be provided through which all water shall pass before entering the pump. The strainers shall be of rigid construction, fabricated of corrosion-resistant material and sufficiently strong to prevent collapsing when clogged. The openings shall be no greater than one-eighth inch in any dimension. The total clear area of all openings shall be at least four times the area of the connecting pipe. The strainer shall have a quick-opening cover. Spare strainer baskets shall be provided. In systems where the filter is located on the suction side of the pump, strainers are not required.

(ii) Pumping equipment. The recirculation pump shall have adequate capacity to meet the design requirements of the spray pad treatment tank, including filter backwashing. It shall be of a self-priming type if installed above the hydraulic gradient. A gauge that indicates both pressure and vacuum shall be installed on the pump suction header and a pressure gauge shall be installed on the discharge side of the pump.

(8) Flow measurement and control.

(i) Flow measurement. A means of continuously measuring rate of flow shall be provided in the recirculation system. For sand filters, the flow-measuring equipment shall be located where the backwash flow rate can also be determined. The indicator shall be capable of measuring at least 1-1/2 times the design flow rate and shall be accurate within 10 percent of true flow. The indicator shall have a range of readings appropriate for the anticipated flow rates, and be installed where it is readily accessible for reading and maintenance, and with straight pipe upstream and downstream of any fitting or restriction in accordance with the manufacturer's recommendation.

(ii) Flow regulation: Automatic devices are required for regulating the rate of flow through the filtration system and flow to the spray features.

(g) Filtration (general). A spray pad treatment tank treatment system shall have one or more filters. It shall be installed with adequate clearance and facilities for ready and safe inspection, maintenance, disassembly and repair.

(1) Sand filters. The design filtration rate of high-rate sand filters (pressure or vacuum) shall not exceed a filtration rate of 15 gallons per minute per square foot of filter area. The sand filter system shall be equipped to backwash each filter at a rate of 12 to 15 gallons per minute per square foot of filter bed area, or as recommended by the manufacturer. The backwash water shall be discharged to waste through a suitable air gap.

(i) Filter media. Sand or other media shall be carefully graded and meet the manufacturer's recommendation for pool use.

(ii) Accessories shall include influent pressure gauge, effluent pressure gauge, backwash sight glass and air relief valve.

(2) Diatomaceous earth. The design filtration rate for pressure or vacuum filters shall be no greater than 1.5 gallons per minute per square foot of effective filter area, except that a maximum filtration rate of 2.0 gallons per minute per square foot may be allowed where continuous "body feed" is provided. The filter and all component parts shall be of such materials, design and construction to withstand normal continuous use without significant deformation, deterioration, corrosion or wear which could adversely affect filter operation.

(i) Precoating. The filter piping shall be designed to refilter or waste the effluent until a uniform body coat is applied. For pressure-type filters, precoat feed equipment shall be provided to apply not less than 0.1 pound of diatomaceous earth per square foot of filter area.

(ii) Body feed equipment. Body feed equipment capable of applying not less than 0.1 pound of diatomaceous earth per square foot of filter area per 24 hours should be provided.

(iii) Regenerative-type filters. Regenerative type of filters shall meet the same standards as pressure filters. Pumping by air or manual means must be provided for, and provision for visual inspection of elements shall be provided.

(iv) Accessories. Accessories for vacuum filters shall include a vacuum gauge and a vacuum limit switch interconnected with the pump. Pressure filters require a backwash sight glass, effluent pressure gauge, influent pressure gauge and air relief valve.

(v) Backwash. Diatomaceous earth filter backwash water must discharge to the sewer system through a separation tank and a suitable air gap. The separation tank sludge shall be disposed of in an approved solid waste disposal facility.

(3) Cartridge filters: filter rate. The design filtration rate for cartridge filters shall not exceed 0.375 gallon per minute per square foot of filter media.

(i) Cartridges. A complete extra set of filter cartridges must be on hand at user's location.

(ii) Accessories shall include influent pressure gauge, effluent pressure gauge and air relief valve.

(h) Disinfection. Spray pad treatment tanks shall be designed to provide for continuous disinfection of the spray pad water with a chemical which is an effective disinfectant and which imparts an easily measured, active residual. An automatic controller shall be provided for continuously monitoring and adjusting the level of free residual disinfectant in the spray pad treatment tank.

(1) Disinfectant feeders. An automatic feeder which is easily adjustable shall be provided for the application of disinfectant.

(i) Construction. Feeders shall be of sturdy construction and materials which will withstand wear, corrosion or attack by disinfectant solutions or vapors, and which are not adversely affected by repeated, regular adjustments or other normal use conditions.

(ii) Maintenance. Feeders shall be capable of being easily disassembled for cleaning and maintenance.

(iii) Operation. The design and construction shall minimize stoppage from chemicals intended to be used or foreign materials that may be contained therein.

(iv) Safeguards. The feeders shall incorporate antisiphon safeguards so that the disinfectant cannot continue to feed into the spray pad treatment tank, the spray pad piping system or the spray pad enclosure if any type of failure of the spray pad equipment occurs.

(v) Capacity. Feeders shall be capable of supplying disinfectant to the spray pad treatment tank in the range up to 10 mg/l chlorine or equivalent.

(2) Hypochlorinators. Where hypochlorinators are used, the following requirements shall apply:

(i) Feed. Feed shall be continuous under all conditions of pressure in the recirculation system without constriction of the recirculation pump suction.

(ii) Solution tanks. If calcium hypochlorite is used, two solution tanks, each with minimum capacity of one-day supply, should be provided. All chemical containers, including those used with chemical feeders, must be clearly labeled regarding their contents.

(3) Ultraviolet light disinfection units.

(i) Treatment systems shall include ultraviolet light disinfection systems unless another treatment process is provided that has been determined by the State Department of Health to be capable of providing the equivalent level of reduction of cryptosporidium as the ultraviolet light disinfection system specified in this section. All water that is provided to the spray pad shall be treated with ultraviolet light during spray pad operation. The ultraviolet light unit validated dosage shall be equivalent to $40\text{mJ}/\text{cm}^2$ or greater at the end of lamp life.

(a) All ultraviolet light units must be validated. The validation process must determine the ultraviolet light unit's disinfection performance by indicating that a dose of $40\text{mJ}/\text{cm}^2$ (at end of lamp life) is achieved at a flow rate equal to or greater than the design flow rate at the setpoint intensity. Validation testing must be performed by an independent agency. The validation procedure used must have been determined by the State Department of Health to be capable of demonstrating the disinfection performance described above.

(b) For systems utilizing quartz sleeves to separate the water passing through the chamber from the ultraviolet source, the system shall be designed to permit cleaning of the lamp jackets and the sensor window or lens without mechanical disassembly. For systems utilizing polytetrafluoroethylene (PTFE) surface materials to separate the water that flows through the ultraviolet chamber from the lamps, the

ultraviolet unit shall be designed to be readily accessible to the interior and exterior of the PTFE. The ultraviolet unit shall be designed to permit use of either physical or chemical cleaning methods.

(c) An accurately calibrated ultraviolet light intensity meter, properly filtered to restrict its sensitivity to the disinfection spectrum shall be installed in the wall of the disinfection chamber at the point of greatest water depth from the tube or tubes.

(d) An automatic system shall be installed to prevent flow to the features in the event the ultraviolet light intensity decreases below the validated setpoint.

(e) An automatic, audible alarm shall be installed to warn of ultraviolet light disinfection system malfunction or impending shutdown.

(f) The unit shall be designed to protect the operator against electrical shock or excessive radiation.

(g) Installation of the unit shall be in a protected enclosure not subject to extremes of temperature.

(h) A spare ultraviolet lamp and other necessary equipment to effect prompt repair by qualified personnel properly instructed in the operation and maintenance of the equipment shall be provided on-site.

(i) The ultraviolet light unit shall be located between the spray pad treatment tank pump discharge and the spray features or as approved in accordance with Section 6-3.24(f)(1).

(4) Disinfection with bromine. Where bromine is used as a disinfectant, the permit-issuing official shall first approve use of solid stick-type bromine and the equipment provided for feeding on a continuous basis.

(5) Ozone generating equipment (OGE) is acceptable only as a supplement to a chlorine or bromine disinfection system. When OGE is installed, the following design performance standards must be met:

(i) Ozone concentration in the spray pad treatment tank water shall not exceed 0.1 mg/l. Off-gassing of ozone shall not result in ozone levels in the equipment room or in the spray pad area exceeding 0.1 ppm. At the time the OGE is installed and annually thereafter the air space within 6 inches of the spray pad treatment tank water level and air in the equipment room shall be tested to determine compliance with this requirement.

(ii) All corona discharge OGEs must be vacuum systems.

(iii) Backflow of spray pad water into the OGE shall not occur.

(6) pH adjustment. Positive feed equipment for the purpose of adding a chemical for pH adjustment shall be provided. An automatic controller shall be provided for continuously monitoring and adjusting the level of pH in the spray pad treatment tank.

(i) Where carbon dioxide (CO₂) is used as a method of pH control, the following features shall be provided:

(a) CO₂ shall be injected into the recirculation pipe at the same point where pH adjustment solutions (i.e., acid) would normally be added. The recirculation pipe shall be of sufficient size and length to provide a minimum of five seconds contact time prior to bather contact.

(b) CO₂ cylinders shall be anchored to prevent damage. Cylinders shall be inaccessible to the general public.

(c) The manufacturer's instructions shall be followed for installation and operation of cylinders. The units shall be operated by the designated persons listed in the safety plan.

(d) CO₂ cylinders should be stored in a protective enclosure at the exterior of occupied structures. If CO₂ cylinders are provided in the interior of occupied structures, they shall be placed in a ventilated enclosure. A louvered fresh air intake shall be provided near the ceiling. Mechanical exhaust ventilation shall be provided at the rate of one air change every three minutes and take suction near the floor as far as practical from the door and fresh air intake. Exhausted air shall be ducted to the exterior of the building through a continuous pipe of at least 1½ inches in diameter with the point of discharge so located as not to contaminate air inlets to any rooms or structures.

(7) Chemical feed equipment. Equipment and piping used to apply chemicals to the water shall be of such size, design and material that they may be cleaned. All material used for such equipment and piping shall be resistant to action of chemicals to be used therein.

(8) An automatic device shall be provided to deactivate chemical feeders when there is no flow in the spray pad treatment tank recirculation system.

(9) Test kit. Colorimetric test kits shall be provided for the determination of free disinfectant residual, pH of the pool water and, where necessary, total alkalinity and calcium hardness. FAS-DPD test kits are also acceptable. A supply of appropriate reagents for making each type of test shall be provided. When colorimetric tests are used, color standards shall be furnished for each of the tests, that allow an accurate comparison of the sample to be tested, both from the standpoint of color and density, and shall be reasonably permanent

and nonfading. Electronic residual and pH monitoring devices may be used in addition to the test kit.

(i) Standards. A DPD (Diethyl-P-Phenylene Diamine) test kit with the following increments: 0.2, 0.4, 0.6, 0.8, 1.0, 1.5, 2.0, 3.0, 5.0, 10 ppm as a minimum, shall be provided to measure the chlorine residual. If other halogens are used, an appropriate scale shall be provided.

(ii) A pH kit. A pH test kit with a range from 6.8 to 8.2, accurate to the nearest 0.2 pH unit, shall be provided.

(i) Bathhouse.

(1) General. Adequate sanitary facilities shall be provided for all spray grounds.

(2) Diaper changing stations: Diaper changing stations shall be provided.

(3) Bathhouse design. Floors of the bathhouse shall be of smooth-finished material with nonslip surfaces, impervious to moisture, easily cleanable and sloped at least one-fourth inch per foot to drains. Carpeting shall not be permitted in shower and toilet areas. Junctions between walls and floors shall be coved and of smooth, impervious materials, free from cracks or open joints. Partitions between dressing cubicles shall terminate at least 10 inches above the floor, or shall be placed on continuous raised masonry or concrete bases at least four inches high. Lockers shall be set either on solid masonry or concrete bases at least four inches above the floor. Lockers shall be vented.

(4) Fixture requirements. An adequate number of toilet and handwashing facilities shall be provided.

(i) Fixtures. Plumbing fixtures and installations shall be in accordance with the Uniform Code.

(5) Hose bibbs. Hose bibbs shall be provided within the bathhouse to enable the entire area to be flushed. Hose bibbs shall be provided with antisiphonage devices.

(j) Miscellaneous.

(1) Manual. A manual(s) for operation and maintenance of the spray pad equipment shall be provided. It shall include instructions for each filter, pump, disinfection or other piece of equipment, drawings, illustrations, charts, operating instructions and parts list, to permit service, operation, winterization and maintenance.